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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,923	11/25/2003	Qing Wang	ROGO 217 (10309708)	9786

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EXAMINER	
DO, PENSEE T	

ART UNIT	PAPER NUMBER
1641	

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/723,923	WANG ET AL.	
	Examiner	Art Unit	
	Pensee T. Do	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-14 and 18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-14, 18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Amendment Entry & Claim Status

The amendment filed on November 09, 2005 has been acknowledged and entered.

Claims 10-14, and 18 are pending.

Withdrawn Rejection(s)

Rejection under 102 by Bieniarz is withdrawn herein.

Rejections under 103 in the previous office action are withdrawn herein.

New Grounds of Rejection

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abrams et al. (US 6,492,118) in view of Ohbayashi et al. (US 6,613,564).

Abrams teaches a method of immobilizing a ligand on a solid phase. The method includes providing a solid phase, which has a reactive group such as a carboxyl or amine group or hydroxyl, with a thiol group (Sulfhydryl group) by linking the solid phase with a thiol introducing linker or latent thiol group in DMSO or DMF, and activating the thiol group, contacting the activated thiol group with a nucleic acid/ligand comprising an acrylamide functional group, which has a molecule that reacts with the activated thiol

group. Thiol group can be bifunctional or monofunctional. (see col. 1, lines 40-48; col. 2, lines 1-27, lines 42-65; col. 3, lines 30-35; col. 4 lines 1-24; col. 5, lines 45; col. 6, lines 20-30; 7, lines 25-40, lines 55; col. 15, lines 49-55); col. 16, lines 19-31, lines 43-50; example 1).

However, Abrams fails to teach the linker molecule that contains the sulfhydryl or thiol group to be N-succinimidyl-S-acetyl thioacetate (SATA) in dimethylformamide (DMF).

Ohbayashi teaches using N-hydroxycuccinimide ester (SATA) dissolved in DMF as a linker that contains a thiol group. (see col. 9, lines 29-47). Ohbayashi also suggests using a maleimide group on an antibody/protein being linked to the enzyme containing SATA in DMF. (see col. 5, lines 26-35).

It would have been obvious to one of ordinary skills in the art to use the SATA dissolved in DMF taught by Ohbayashi as an alternative linker in the method of Abrams to link the solid phase to the ligand since both references suggest using linkers that contain a sulfhydryl group.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abrams in view of Ohbayashi as applied to claim 10 above, and further in view of Siiman et al. (US 5,639,620).

Abrams and Ohbayashi have been discussed above.

However, Abrams and Ohbayashi fail to teach magnetic particles being the solid phase.

Siiman teaches magnetic particles coated with aminodextran or gelatin which

contains an amine pendent group. Crosslink the ligand/protein/antibody with the magnetic particles by using the bifunctional crosslinking agent such as p-iminothiolane hydrochloride. The coupling of the biological substance to the particle involves activation of the free amino groups of the gelatin-coated particles with water soluble heterobifunctional reagent such as 2-iminothiolane hydrochloride (IT) also known as 2-aminothiolane-HCl or Traut's reagent, sulfosuccinimidyl-4-(N-maleimidomethyl)cyclohexane-1-carboxylate (sulfo-SMCC), m-maleimidobenzoyl-N-hydroxysuccinimide ester, N-succinimidy1-3-(2-pyridyldithio)propionate, succinimidyl-4-(p-maleimidophenyl)butyrate, N-succinimidyl-(4-iodoacetyl)aminobenzoate, the reagents listed above as substitutes for glutaraldehyde and the like. The 2-iminothiolane hydrochloride also known as 2-aminothiolane-HCl or Traut's reagent and the maleimidyl/succinimidyl reagents are preferred. (see col. 7, lines 60-65; col. 10, lines 15-25, 53-60)

It would have been obvious to one of ordinary skills in the art to use magnetic particles as a solid phase as taught by Siiman in the method of Abrams and Ohbayashi since these references teach a method of conjugating a ligand to a solid surface via a bifunctional crosslinking agent for ligand bound magnetic particles, in an immunoassay, can be separated by magnetic force rather than centrifugation which is time consuming. The solid phase taught by Abrams can be replaced with magnetic particles of Siiman and a linker such as that taught by Ohbayashi can be used to link ligand to the magnetic particles. Ligand bound to magnetic particles can be used for separation of targets that are bound to the magnetic particles by magnetic force and can

be reused by releasing the targets after separation. Whereas centrifugation requires a longer period of time to separate the target from the sample. One skilled in the art would have reasonable expectation of success for using the method of Abrams and Ohbayashi to react a ligand to gelatin-coated magnetic particles of Siiman because Abrams teaches that the solid phase comprises a polymer and the gelatin-coated magnetic particles of Siiman also comprise gelatin polymer on its surface.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abrams in view of Ohbayashi as applied to claim 10 above, and further in view of Armstrong (US 5,964,996).

Abrams and Ohbayashi have been discussed above.

However, Abrams and Ohbayashi fail to teach the ligand is an antibiotic.

Armstrong teaches macrocyclic antibiotic chemically bonded to a solid support such as silica gel, agarose, dextran, cellulose, branch amylose (see col. 6, lines 58-67; col. 7, lines 5-10) via linkages such as amine, amide, thioler groups (see col. 7, lines 27-30).

It would have been obvious to one of ordinary skills in the art to attach antibiotic as taught by Armstrong to solid phase according to the method of Abrams and Ohbayashi through routine experimentation since these antibiotics also contain a carboxyl or thiolether groups thereby enabling the reaction with a coupling agent or thiol introducing agent. Since Armstrong teaches that the antibiotics of his invention can be used a separation agent in mobile or stationary phase (see Armstrong col. 2, lines 57-

59; col. 3, line 66-col. 4, line 2), the antibiotics of Armstrong can be immobilized to the solid phase of Abrams to separate agents such as bacteria, or antigens in assay.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abrams in view of Ohbayashi as applied to claim 10 above, further in view of Armstrong (US 5,964,996) as applied to claim 12 above, and further in view of Molna-Kimber et al. (US Patent Application Publication 2002/0151088A1).

Abrams, Ohbayashi and Armstrong have been discussed above.

Either Abrams, Ohbayashi or Armstrong fails to teach antibiotic such as Rapamycin.

Molna-Kimber teaches rapamycin is a macrocylic antibiotic. (see page 1, 1st col. 2nd paragraph).

It would have been obvious to one of ordinary skills to use Rapamycin as taught by Molna-Kimber in the combination method of Abrams, Ohbayashi and Armstrong since Rapamycin is a macrocyclic antibiotic and Abrams in combination with Ohbayashi and Armstrong suggest that macrocylic antibiotics can be coupled to a solid phase for detecting specific antibodies against antibiotics such as Rapamycin because Rapamycin have immunosuppressant activity as well as antibiotic and other pharmacological activities and are useful in treating graft and transplant rejections, diseases of inflammation and autoimmune diseases such as rheumatoid arthritis, diabetes, and multiple sclerosis.

Claims14 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over or Abrams (US 6,492,118) in view of Ohbayashi (US 6,613,564) as applied to claim 10 above, and further in view of Hansen et al. (US 6,663,861).

Abrams and Ohbayashi have been discussed above.

However, Abrams and Ohbayashi fail to teach a linker as p-maleimidophenyl isocyanate.

Hansen teaches various methods of covalent coupling such as coupling molecule with sulfhydryl groups to hydroxyl groups by using a N-(p-maleimidophenyl) isocyanate. (see col. 5, lines 15-25).

It would have been obvious to one of ordinary skills in the art to use N-(p-maleimidophenyl) isocyanate as a linker as suggested by Hansen to link the ligand which contains a maleimide or sulfhydryl group as taught in the method of Abrams and Ohbayashi since Abrams and Ohbayashi teach using a maleimide for linking the ligand which contains a sulfhydryl group. N-(p-maleimidophenyl) isocyanate is known as a heterobifunctional crosslinker which links a ligand to a solid surface.

Response to Arguments

Applicants have amended the claims to SATA in DMF and argue that the prior arts cited in the previous office action do not teach SATA in DMF.

Applicant's arguments with respect to claims 10-14, 18 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pensee T. Do whose telephone number is 571-272-0819. The examiner can normally be reached on Monday-Friday, 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Pensee T. Do
Patent Examiner
March 3, 2006

Christopher L. Chin

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3/11/06